AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) In a wireless network including a plurality of nodes, a method of performing neighbor discovery, the method comprising:

generating a signal at a first node for alerting other nodes in the network of the presence of the first node, the signal comprising a spread signal;

broadcasting the signal from the first node, the broadcasted signal having a low probability of detection by an unintended receiver,

receiving the signal at a second node;

filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal;

calculating an energy associated with the ~~received~~ filtered signal;

establishing a threshold;

determining whether the energy is greater than the threshold; ~~and~~

identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold; and

transmitting a message from the second node to the first node, the message comprising information identifying the second node.

2. (canceled)

3. (currently amended) The method of claim [[2]] 1, further comprising:

identifying a spreading code to be used for transmissions from the second node to the first node, and

wherein the transmitting comprises:

transmitting the message using the identified spreading code.

4. (currently amended) The method of claim [[2]] 1, wherein the transmitting includes:

identifying a directional antenna to be used for transmitting the message, and

transmitting the message using the identified directional antenna.

5. (currently amended) The method of claim [[2]] 1, further comprising:

de-spreading the signal by the second node using a spreading code associated with the signal; and

determining the identity of the first node from the de-spread signal.

6. (canceled)

7. (currently amended) The method of claim 1, wherein the spread signal is spread using at least one of a frequency hopping sequence, a direct sequence ~~and~~ or a number of short pulses in accordance with ultra-wideband radio technology.

8. (currently amended) The method of claim 1, wherein the broadcasting includes at least one of:

~~broadcasting the signal at regular intervals,~~

broadcasting the signal at random or pseudorandom intervals, ~~and~~ or

broadcasting the signal using a combination of regular and random or pseudorandom intervals.

9. (currently amended) In a network comprising a plurality of nodes, a first node comprising:

an omni-directional antenna;

a directional antenna;

a processor configured to generate a spreading sequence that identifies the first node;

a first transmitter configured to broadcast the spreading sequence using the omni-directional antenna; ~~and~~

a receiver ~~configure~~ configured to receive a message from a second node, the message identifying the second node and indicating that the second node is a neighbor node; and

a second transmitter configured to transmit data to the second node using the directional antenna after the message from the second node is received.

10. (currently amended) The first node of claim 9, wherein the transmitter is further configured to at least one of:

broadcast the spreading sequence ~~at regular intervals, broadcast the spreading sequence~~ at random intervals, ~~or~~ pseudorandom intervals ~~and~~ or ~~broadcast the spreading sequence at~~ a combination of regular and random or pseudorandom intervals.

11. (currently amended) The first node of claim 9, wherein the processor is further configured to:

generate at least a second spreading sequence that identifies the first node, wherein the transmitter is configured to broadcast the second spreading sequence at ~~predetermined,~~ random or pseudorandom intervals.

12. (currently amended) The first node of claim 9, wherein the first transmitter is configured to:

broadcast the spreading sequence using at least one of a frequency hopping sequence, a direct sequence ~~and~~ or a number of relatively short pulses.

13. (canceled)

14. (currently amended) A computer-readable medium having stored thereon a plurality of sequences of instructions, said instructions including sequences of instructions which, when executed by a processor, cause said processor to:

retrieve a spreading sequence that identifies a first node in a wireless network;

broadcast the spreading sequence using an omni-directional antenna, the spreading sequence having a low probability of detection by an unintended receiver; ~~and~~

receive a message from a second node in the wireless network, the message identifying the second node and indicating that the second node is a neighbor node; and

transmit data packets to the second node using a directional antenna after the message from the second node is received.

15. (currently amended) The computer-readable medium of claim 14, including instructions for causing said processor to at least one of:

~~broadcast the spreading sequence at regular intervals,~~ broadcast the spreading sequence at random or pseudorandom intervals ~~and~~ or broadcast the spreading sequence at a combination of regular and random or pseudorandom intervals.

16. (currently amended) The computer-readable medium of claim 14, including instructions for causing said processor to:

retrieve at least a second spreading sequence that identifies the first node; and

broadcast the second spreading sequence ~~at predetermined or~~ random or pseudorandom intervals.

17. (currently amended) The computer-readable medium of claim 14, wherein the spreading sequence comprises at least one of a frequency hopping sequence, a direct sequence ~~and~~ or a number of relatively short pulses.

18. (canceled)

19. (currently amended) In a network comprising a plurality of nodes, a first one of the nodes comprising:

~~at least one~~ a first antenna configured to receive a signal from a second one of the nodes over a period of time;

a filtering device configured to filter the received signal using a filter matched to a spreading sequence or code used to spread the signal; ~~and~~

a processing device coupled to the filtering device, the processing device configured to:

receive the filtered signal,

calculate an energy associated with the filtered signal, ~~and~~

determine whether the energy exceeds a threshold, and

identify the second node as a neighbor node when the energy exceeds the threshold;

a second antenna; and

a transmitter configured to transmit a message to the second node via the second antenna, the message comprising information identifying the second node.

20-21. (canceled)

22. (currently amended) The first node of claim [[21]] 19, further comprising:

a memory configured to store information that identifies spreading codes to be used for transmissions to the respective plurality of nodes in the network; and

wherein the processing device is further configured to:

identify a spreading code to be used for transmissions to the second node using the information stored in the memory, and

transmit the message using the identified spreading code.

23. (original) The first node of claim 22, wherein the memory stores a unique spreading code for each of the respective plurality of nodes in the network.

24. (currently amended) The first node of claim [[21]] 19, ~~wherein the at least one antenna comprises~~ further comprising:

a set of directional antennas, wherein the second antenna is included in the set of directional antennas and wherein the processing device is further configured to:

identify the second antenna from the set of directional antennas ~~a directional antenna~~ to be used for transmitting the message~~, and~~

~~forward the message using the identified directional antenna~~.

25. (currently amended) The first node of claim [[20]] 19, wherein the processing device is further configured to:

de-spread the signal using a spreading code associated with the signal, and

determine the identity of the second node based on the de-spread signal.

26. (currently amended) The first node of claim [[21]] 19, wherein the processing device is further configured to:

determine a spreading code associated with the second node, and

generate data messages for transmission to the second node using the determined spreading code.

27. (currently amended) A computer-readable medium having stored thereon a plurality of sequences of instructions, said instructions including sequences of instructions which, when executed by a processor, cause said processor to:

filter a signal received over a period of time from a first node in a wireless network using a filter matched to a spreading sequence or code used to spread the signal;

calculate an energy associated with the filtered signal;

determine whether the energy exceeds a threshold; ~~and~~

identify the first node as a neighbor node when the energy exceeds the threshold;

identify a spreading code to be used for transmissions to the first node; and

transmit a message to the first node using the identified spreading code, the message comprising information identifying the receiving node and indicating that the receiving node is a neighbor node.

28-29. (canceled)

30. (currently amended) The computer-readable medium of claim [[29]] 27, wherein the identified spreading code is unique for transmissions to the first node.

31. (currently amended) The computer-readable medium of claim [[28]] 27, including instructions for causing the processor to:

identify a directional antenna to be used for transmitting the message.

32. (original) The computer-readable medium of claim 27, including instructions for causing the processor to:

de-spread the signal using a spreading code associated with the signal; and

determine the identity of the first node based on the de-spread signal.

33. (currently amended) The computer-readable medium of claim 27, wherein when identifying a spreading code to be used for transmissions to the first node, the instructions cause ~~including instructions for causing~~ the processor to:

determine a spreading code associated with the first node; and

transmit messages to the first node using the determined spreading code.

34. (currently amended) A system for performing neighbor discovery in a wireless network, comprising:

means for generating a signal at a first node for alerting other nodes in the network of the presence of the first node, the signal comprising a spread signal;

means for broadcasting the signal from the first node using an omni-directional antenna or a set of sectored antennas;

means for receiving the signal at a second node;

means for filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal;

means for calculating an energy associated with the filtered signal;

means for determining whether the energy is greater than a threshold; ~~and~~

means for identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold; and

means for transmitting a message from the second node to the first node using a directional antenna, the message comprising information identifying the second node.

35. (currently amended) In a network including a plurality of nodes, a method of performing neighbor discovery, the method comprising:

broadcasting a spreading sequence from at least a first node in the network using an omni-directional antenna, the spreading sequence having a low probability of detection by an unintended receiver and being used to alert other nodes in the network of the presence of the first node;

detecting, by at least a second node in the network, the first node using a filter matched to detect the spreading sequence used by the first node;

identifying, by the second node, the first node as a neighbor;

selecting, by the second node, a directional antenna; and

transmitting a message from the second node to the first node using the directional antenna, the message comprising information identifying the second node.

36. (original) The method of claim 35, further comprising:

determining a spreading code to be used for transmissions from the second node to the first node; and

wherein the transmitting a message comprises:

transmitting the message using the determined spreading code.

37. (original) The method of claim 35, further comprising:

broadcasting the spreading sequence a number of times; and adjusting the power level associated with the broadcasting based on whether a reply message, indicating that at least the second node has detected the spreading sequence, has been received by the first node.

38. (original) The method of claim 37, further comprising:

changing the spreading sequence after a number of broadcasts.

39. (currently amended) A first node in a wireless network comprising:

an omni-directional antenna;

a directional antenna;

a transmitter configured to transmit a signal for alerting other nodes in the network of the presence of the first node via the omni-directional antenna, the signal comprising a spread signal that is spread using at least one of a direct sequence, a frequency hopping sequence ~~and~~ or a number of short pulses; and

a receiver configured to receive a message from a second node in the network, the message identifying the second node as a neighbor node and being sent in response to the second node detecting the signal from the first node, and

wherein the transmitter is further configured to:

transmit data packets to the second node using the directional antenna after a neighbor relationship with the second node has been established.

40. (canceled)

41. (original) A first node in a wireless network comprising:

a plurality of directional antennas;

a receiver configured to receive a signal from a second node in the wireless network over a period of time;

a processing device configured to:

identify the second node as a neighbor node based on an energy associated with the received signal,

identify a first directional antenna from the plurality of directional antennas that received the signal with a highest signal-to-noise ratio, and

generate a message for transmission to the second node, the message comprising information identifying the first node; and

a transmitter configured to transmit the message to the second node using the first directional antenna.